

NOMENCLATORIAL NOTES ON ASTER (ASTERACEAE)-- II.
NEW COMBINATIONS AND SOME TRANSFERS.

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Nomenclatorial changes and transfers suggested in the following are supported by information obtained from the examination of types and authentic specimens. Several years of intensive field experience and experimental work, as well as the study of many herbarium specimens, form the foundation for the underlying taxonomic decisions. I have concluded that certain new combinations, transfers and status changes are needed, and that some taxa unjustifiably have been submerged, i.e., some older names should be reinstated.

Explanatory comments are presented in the appropriate places. The sequence of taxa is that of my classification of the New World species of Aster (Jones, 1980a). I am using this opportunity to correct some errors within groups in that classification. My decision to number notes that primarily deal with nomenclatorial changes (cf. Jones, 1984a) was prompted by the anticipation of additional publications of this kind.

Aster subg. Oxytripolium

A. lemmonii A. Gray, Synopt. Fl. N. Amer. 1(2): 199, 1884. TYPE: "s. Arizona, Huachuca Mountains," near Ft. Huachuca, 1882. Lemmon 2743 (LECTOTYPE, here designated: GH!; Lemmon 2742 (SYNTYPES: G!, P!); Lemmon 2747 (possible SYNTYPE: BM!); Santa Rita Mountains, Pringle 318 (SYNTYPE: GH!); Pringle s.n. (possible SYNTYPES: G!, P!).

The lectotype seems to be the only specimen marked by A. Gray with the above name. In my opinion, the plants are to be identified with A. potosinus A. Gray and, on the basis of priority, the name A. lemmonii is to be placed in synonymy under the following:

A. potosinus A. Gray, Proc. Amer. Acad. Arts 15: 32, 1880. TYPE: Mexico, San Luis Potosi, 22°N. Lat., 1878. Parry & Palmer 384 (HOLOTYPE: GH!; ISOTYPES: BM!, P!).

A. leonis Britton does not belong in this subgenus.-- see subg. Symphotrichum sect. Dumosi.

A. lepidopodus Robinson & Fernald probably does not belong in Aster (cf. Nesom, 1981). The species definitely does not belong in this subgenus.

A. riparius Kunth has been transferred to Machaeranthera (cf. Jones, 1983a).

A. bracei Britton in Small, Fl. Miami 190, 1913. TYPE: Bahamas, New Providence, 31 Aug, 1904. Britton & Brace 394 (HOLOTYPE: NY!).-- Syn.: A. tenuifolius L. var. aphyllus R. W. Long, Rhodora 72: 40, 1970. TYPE: Florida, Hillsborough Co., n.w. of Tampa, 24 Dec, 1962. Lakela 25610 (HOLOTYPE: GH!; ISOTYPE: USF!).

In my opinion, this taxon should be recognized at the rank of species.

Aster subg. Virgulus sect. Concolores

A. pratensis Rafinesque, Fl. Ludov. p. 67, 1817. Lasallea sericea (Vent.) E. Greene ssp. pratensis (Raf.) Semple & Brouillet, Amer. J. Bot. 67: 1022, 1980. Virgulus pratensis (Raf.) Reveal & Keener, Taxon 30: 649, 1981. TYPE: Louisiana, Robin (not found).

Although I have not seen the type of the above name, the plant and other specimens identified with it, in my opinion, are only varietally distinct from A. sericeus Vent. The name A. pratensis is placed in synonymy under the following:

A. sericeus var. β microphyllus De Candolle, Prodrumus 5: 233 (no. 45), 1836. TYPE: Texas, Nov, Dec, 1828, Berlandier 1876 (HOLOTYPE: G-DC!; ISOTYPES: BM!, G!, P!).-- A. ciliatus Nuttall, Trans. Amer. Phil. Soc. n.s. 7: 295, 1840, non Walter (1788). TYPE: "In Louisiana, v.s., in Mr. Durand's herbarium, of Philadelphia." (HOLOTYPE: probably PH-- not seen).-- A. phyllolepis Torrey & Gray, Fl. N. Amer. 2: 113, 1841. Lasallea phyllolepis (Torr. & Gray) E. Greene, Leafl. Bot. Obs. & Crit. 1: 5, 1903. TYPE: the same as that of A. ciliatus Nuttall (LECTOTYPE, here designated: probably PH-- not seen); Texas, 1835. Drummond s.n. (SYNTYPES: BM!, CGE!, P!).

Aster subg. Virgulus sect. Patentes

A. lima Lindley in De Candolle, Prodrumus 5: 230. 1836. TYPE: Mexico, Mr. Graham [HOLOTYPE: CGE! (ex Herb. Bentham)].

The taxon is conspecific with and the name goes in synonymy under the following:

A. moranensis Kunth, Nov. Gen. Sp. 4: 93, 1820. TYPE: Mexico, "inter Cerro Ventoso et sodinam Moran." Humboldt 4113 [HOLOTYPE (or LECTOTYPE, here designated): P!; ISOTYPE (or ISOLECTOTYPE): B!]. Synonyms: A. ehrenbergii Schultz-Bip. in Seemann, Bot. Voy. H. M. S. Herald, p. 302, 1856. TYPE: Mexico, Ehrenberg 791 (LECTOTYPE, here designated: P!; ISOLECTOTYPES: B?, CGE!; Ehrenberg 947 (SYNTYPES: B?, CGE!, P!).-- A. lindenii Schultz-Bip. in Seemann, Bot. Voy. H. M. S. Herald, p. 302, 1856. TYPE: Mexico, Veracruz, "in savannis Miradoris," Jan, 1839. Linden 1170 (LECTOTYPE: P!; 2 ISOLECTOTYPES or SYNTYPES: G!).

Aster subg. Conyzopsis (Torrey & Gray) A. Gray

I may risk being accused of going contrary to my previously advocated generic concept of Aster but, if any groups are to be segregated, in my opinion, this should be one of them. Löve and Löve (1982) have recently reinstated the generic name Brachyactis for the group and, in this case, I agree with them (cf. Jones, 1984b). Although I have made only a cursory search of the literature, the available evidence suggests that the center of distribution for Brachyactis may be Asia, rather than North America (cf. Bentham & Hooker, 1873; J. D. Hooker, 1882; Kitamura, 1960, 1964; Tamamschjan, 1959). Several species have been described from Asia, although some apparently belong in Erigeron. At this time, I cannot make a judgment. However, I have seen an authentic specimen (CGE!) that probably is an isotype of the generic name, a Ledebour collection from Siberia originally named and described as Erigeron ciliatus. This plant is very robust, with an ample diffusely branched capitulescence, but otherwise nearly indistinguishable from specimens of North American collections that have been called A. brachyactis S. F. Blake (a renaming of the above under Aster because the name A. ciliatus was preoccupied).

The two species that occur in North America are only weakly distinguishable, but at this time, I will not combine them. The synonymies are listed below.

Brachyactis ciliata (Ledebour) Ledebour, Fl. Ross. 2: 495. 1846. Erigeron ciliatus Ledebour, Ic. pl. p. 24, 1829; Fl. Altaica 4: 92. 1829. Aster ciliatus B. Fedtschenko, Rastid. Turkest. p. 731, 1915, non Walter (1788). TYPE: Siberia. Ledebour s.n. (HOLOTYPE: not seen; probable ISOTYPE: CGE!).-- Conyza altaica De Candolle, Prodrromus 5: 380, 1836. TYPE: "in Siberia altaica" C. A. Meyer [SYNTYPE-- to be lectotypified (not seen)].-- A. brachyactis S. F. Blake, Contr. U. S. Nat. Herb. 25: 564, 1925, a renaming of B. ciliata (Ledeb.) Ledeb. under Aster, and based on the same type, i.e., Ledebour s.n.

Typical B. ciliata ssp. ciliata probably is restricted to Asia. Two subspecies can be recognized in North America, as follows:

- B. ciliata ssp. angusta (Lindley in Hooker) A. G. Jones, stat. and comb. nov. Tripolium angustum Lindley in Hooker, Fl. Bor.-am. 2: 15, 1834. Aster angustus (Lindley in Hooker) Torrey & Gray, Fl. N. Amer. 2: 162, 1841, non Nees (1818). B. angusta (Lindley in Hooker) Britton in Britton & Brown, Ill. Fl. 3: 383, 1898. TYPE: "Banks of the Saskatchewan", Drummond s.n. (not seen).-- Crinitaria humilis Hooker, Fl. Bor.-am. 2: 24, 1834. Linosyris? humilis (Hooker) Torrey & Gray, Fl. N. Amer. 2: 234, 1841. TYPE: "Banks of the Saskatchewan," Drummond s.n. (not seen).
- B. ciliata ssp. laurentiana (Fernald) A. G. Jones, stat. and comb. nov. Aster laurentianus Fernald, Rhodora 16: 59, pl. 109 f. 1-3, 1914. Brachyactis laurentiana (Fernald) Botschantzev, Not. Syst. Herb. Inst. Bot. Acad. Sci. URSS. 16: 384, 1954. TYPE: Prince Edward Island, Brackley Point, 31 Aug, 1912. Fernald, Long and St. John 8166 (HOLOTYPE: GH!; ISOTYPE: BM!, GH!).-- A. laurentianus var. magdalenensis Fernald, Rhodora 16: 59, pl. 109, f. 4, 1914. TYPE: Magdalen Islands, Coffin Island, Grande Entree, 19 Aug, 1912. Fernald, Long and St. John 8165 (HOLOTYPE: GH!; ISOTYPES: BM!, BH-CU!).-- A. laurentianus var. contiguus Fernald, Rhodora 16: 60, pl. 109, f. 5, 1914. TYPE: New Brunswick, Gloucester Co., Tracadie, S. F. Blake 5645 (HOLOTYPE: GH!; ISOTYPE: BH-CU!, P!).
- B. frondosa (Nuttall) A. Gray, Proc. Amer. Acad. Arts 8: 647, 1873. Tripolium frondosum Nuttall, Trans. Amer. Phil. Soc. n.s. 7: 296, 1840. Aster frondosus (Nuttall) Torrey & Gray, Fl. N. Amer. 2: 165, 1841. TYPE: Oregon, "Muddy ponds in the Rocky Mountains, near Lewis [Snake] River," Nuttall (HOLOTYPE: BM!).-- B. ciliata var. carnosula Benthham in Hooker's Icones Plantarum 12: 6, 1876. TYPE: New Mexico. (not seen).-- A. woodhousei Wooton, Bull. Torrey Bot. Club 25: 458, 1898. B. woodhousei (Wooton) Wooton & Standley, Contr. U. S. Nat. Herb. 19: 682, 1915. TYPE: New Mexico, Zuni, Sept, 1851. Woodhouse s.n. [LECTOTYPE, designated by Wooton & Standley, l.c. (not seen)]. E. New Mexico, Sept, 1853. Bigelow, and Albuquerque, 1894. C. L. Herrick (SYNTYPES: not seen).

Aster subg. Symphyotrichum sect. Concinni

- A. azureus Lindley in Hooker = A. oolentangiensis Riddell (cf. Jones, 1983b).
- A. purpuratus Nees: not to be identified with A. attenuatus Lindley in Hooker (see note below). Instead, to be recognized at varietal rank, as follows:

A. laevis L. var. purpuratus (Nees) A. G. Jones, stat. and comb. nov. A. purpuratus Nees, Gen. et sp. Ast. 118, 1832, pro parte (excl. coll. Horto Argentoratensi and Herb. Nestler); De Candolle, Prodrômus 5: 244, 1836. TYPE: "hort. Par.", under the name A. miser (HOLOTYPE: Herb. Lamarck, P!).-- A. miser sensu Lamarck, Enc. Meth. 1: 308, 1783, non Linnaeus (1753), i.e., excl. synonyms. TYPE: as above.-- A. virgatus Elliott, Sketch Bot. S. Carolina and Georgia, p. 353, 1824, non Moench (1802). TYPE: "in the western district of Georgia", Elliott (not seen).-- A. ursinus Burgess in Small, Fl. S.E. United States, pp. 1218 and 1340, 1903. TYPE: Georgia, 1840?, Boykin s.n. (HOLOTYPE: NY!; ISOTYPE: GH!).

Shinners (1945: 68) pointed out that Aster purpuratus Nees is an "exempla incongrua," partly because of pubescence traits mentioned in the description that he regarded as uncharacteristic for a member of the A. laevis group. He discarded the name as "obviously based on a mixture," but he failed to cite the specimens or lectotypify the name. The only published reference given by Nees von Esenbeck (1832) is that of Lamarck (1783). De Candolle (1836), by excluding the Linnaean synonyms from consideration, actually determined that the name was to be based on the specimen from the "Jardin du Roi" in Lamarck's herbarium. Note that the holotype for A. laevis var. purpuratus is the LECTOTYPE (here designated) for the basionym, i.e., for A. purpuratus Nees sensu lato. The plant is perfectly described by A. virgatus Elliott.

A. attenuatus Lindley in Hooker, Comp. Bot. Mag. 1: 97, 1835.-- This name really seems to be based on two totally incongruous elements. The TYPE is cited as "Jacksonville, Louisiana, Drummond." A specimen in Lindley's herbarium at CGE(!) was marked as "type", probably by Dr. Yeo, and annotated by me as "probable HOLOTYPE or LECTOTYPE." However, the information on the sheet gives "Alabama" as the place of collection. The plant is somewhat intermediate in characteristics between A. dumosus and A. laevis. A second Drummond collection inscribed with Lindley's name is on deposit at GH (!). This specimen has the correct locality information for A. attenuatus, but the plant belongs in A. paludosus ssp. hemisphericus.

Aster subg. Symphyotrichum sect. Dumosi

A. brachypholis Small: to be combined with A. fragilis Willd. but recognized at the varietal level, as follows.

A. fragilis Willdenow var. brachypholis A. G. Jones, stat. and comb. nov. A. brachypholis Small, Man. S.E. Flora, pp. 1389 and 1509, 1933. TYPE: Florida, Liberty Co., Aspalaga Bluff, 28 Nov, 1923. Small, De Winkeler & Mosier 11027 (HOLOTYPE: NY!).

The plants are morphologically similar to those that have been called A. vimineus Lam. var. subdumosus Wieg. They seem to combine certain traits of A. dumosus L. and A. vimineus sensu auct. non Lam. (= A. fragilis). However, I am not combining the two varieties because I think they have originated independently, and they are geographically separated. In fact, the intermediate traits exhibited by the plants from n. Florida, s. Mississippi, s. Louisiana, and adjacent s.e. Texas that identify with A. fragilis var. brachypholis are almost certainly the products of introgression involving gene flow from southern varieties of A. dumosus, whereas the plants of var. subdumosus-- type locality: Olney, Illinois (see below)-- may be mere morphological variants (i.e., the heads long-peduncled, not secund) that have resulted from convergent evolution via adaptive radiation, and not from gene flow. Or, if the populations were influenced by gene flow from A. dumosus, the taxon involved probably would be var. strictior Torr. & Gray, a well delimited northern variety that ranges from the Great Lakes region eastward to the Atlantic (cf. Wiegand, 1928).

- A. fragilis Willd. var. subdumosus (Wiegand) A. G. Jones, comb. nov. A. vimineus Lam. var. subdumosus Wiegand, *Rhodora* 30: 171, 1928. TYPE: Illinois, Richland Co., Olney, 23 Sept, 1914. Ridgway 68 (HOLOTYPE: GH!).
- A. bullatus Klatt, *Ann. Naturhist. Mus. Vienna* 9: 359, 1894. TYPE: Mexico, Inquila, March, Galeotti s.n. (HOLOTYPE: W!).-- Syn.: A. jalapensis Fernald, *Proc. Amer. Acad.* 35: 572, 1900. TYPE: Mexico, Veracruz, Barranca de Chavarillo, 24 April, 1899. C. G. Pringle 8118 (HOLOTYPE: GH!; ISOTYPES: BM!, CM!, G!, M!, MO!, MSC!, P!, RM!).-- ?A. burgessii Britton, *Bull. Torrey Bot. Club* 41: 14, 1914. TYPE: Cuba, Prov. Pinar del Rio, Vicinity of Guane. "Falls, Rio Portales, March 4-5, 1911." N. L. Britton, E. G. Britton & J. F. Cowell 9751 (HOLOTYPE: NY!).-- A. schaffneri Schultz-Bip., nomen tantum?!. Authentic specimens: Mexico, Veracruz, Orizaba, Oct, 1855. Schaffner 371 (potential LECTOTYPE: P!); Schaffner s.n. (potential SYNTYPES: GH!, P!).

This species is very variable, probably closely related to A. lateriflorus. I had listed it at the end of my classification among the species unknown to me (Jones, 1980a), but in the meantime, the holotype was sent to me for study from Vienna. In addition to Mexico, collections have been recorded from Guatemala and also from Cuba (= A. burgessii).-- Note that A. jalapensis Fernald is placed in synonymy here.-- There are many herbarium specimens that have been labelled A. schaffneri Schultz-Bip., all collected in the state of Veracruz. I have been unable to find an effectively published reference to this name.

A. spatelliformis Burgess in Small = to be recognized at varietal rank as follows:

A. lateriflorus (L.) Britton var. spatelliformis (Burgess in Small) A. G. Jones, stat. and comb. nov. A. spatelliformis Burgess in Small, Fl. S.E. United States, pp. 1225 and 1340, 1903. TYPE: Florida, Duval Co., near Jacksonville, 1895. A. H. Curtiss s.n. (HOLOTYPE: NY!).

A. vimineus Lamarck = A. lateriflorus (L.) Britt.

I have examined and re-examined the type material in the Lamarck herbarium (P!). There are three pieces ("H. R."), one of which was marked TYPE (should be LECTOTYPE!). This specimen and a probable duplicate (= ISOLECTOTYPE) belong in typical A. lateriflorus. The third specimen, not in flower and to be regarded as a SYNTYPE, probably belongs in var. angustifolius Wiegand. The name that applies to A. vimineus s.auct. non Lam. is A. fragilis Willd. (cf. Jones, 1980a, b).

A. fontinalis Alexander in Small, Man. S.E. Flora, pp. 1382 and 1509, 1933. TYPE: Florida, prairie s. of Deep Lake, 7 Dec, 1925. Small & Buswell s.n. (HOLOTYPE: NY!).

This species belongs in subsect. Dumosi. In addition to the type, I have seen collections, probably belonging in this species, from n. Florida, s. Louisiana, and s.e. Texas. The species is closely related to and possibly to be submerged under the following (more study is needed):

A. leonis Britton, Mem. Torrey Bot. Club 16: 114, 1920. TYPE: Cuba, Prov. Havana, "marshes west of Batabano," 7 Dec, 1915. Leon & Cazanas 5753 (HOLOTYPE: NY!; ISOTYPE: P!).

Aster subg. Symphyotrichum sect. Heterophylli

A. ciliolatus Lindley in Hooker var. comatus (Fernald) A. G. Jones, comb. nov. A. lindleyanus Torrey & Gray var. comatus Fernald, Rhodora 6: 142, 1904.-- A. ciliolatus f. comatus (Fernald) Fernald, Rhodora 51: 95, 1949. TYPE: Maine, river thicket, Fort Fairfield, 19 Sept, 1900. Fernald, s.n. (HOLOTYPE: GH!; probable ISOTYPE: NEBC!).

This variety is characterized by a densely hirsute stem and by leaves that are uniformly hirsute on the lower surface.

A. ciliolatus var. wilsonii (Rydb.) A. G. Jones, stat. and comb. nov. A. wilsonii Rydberg, Bull. Torrey Bot. Club 37: 138, 1910. TYPE: British Columbia, Armstrong, 1904. E. Wilson 419 (HOLOTYPE: NY!; ISOTYPE: UBC!).

The plants are characterized by having the larger leaves with rounded, rather than cordate bases; petioles, midribs and upper portion of stems are ciliate pubescent with long white trichomes. Heads are relatively large, the ligulate corollas ca 12-15 mm long (incl. the tubes).

A. x maccallae Rydberg, pro sp.

After examining the holotype, as well as populations in the field, I have concluded that my previous interpretation (Jones, 1980a, b) is incorrect. The plant probably is not a true hybrid. Instead, it may be a derivative that essentially belongs in A. ciliolatus but exhibits strong introgression of A. laevis, as well as some influence of A. subspicatus Nees. Nomenclaturally, the plants are best accommodated at varietal rank as follows:

A. ciliolatus Lindley in Hooker var. maccallii (Rydberg) A. G. Jones, stat. and comb. nov. A. maccallae Rydberg, Bull. Torrey Bot. Club 37: 138, 1910. TYPE: Alberta, vicinity of Banff on Sulphur Mtn., 16 Aug, 1899. McCalla 2026 (HOLOTYPE: NY!; ISOTYPE: ALTA!).

A. texanus Burgess = to be merged with A. drummondii, as follows:

A. drummondii Lindley in Hooker ssp. texanus (Burgess) A. G. Jones, stat. and comb. nov. A. texanus Burgess in Small, Fl. S. E. United States, pp. 1214 and 1339, 1903. TYPE: "Tex., Lindheimer, 1842, (?) in Herb. Mo. B. G." (i.e., holotype said to be at MO, but not found); "Comanche Spring; New Braunfels, etc., Oct. 1849," Lindheimer 872 [LECTOTYPE (or NEOTYPE), here designated: NY!; ISOLECTOTYPES (or ISONEOTYPES): BM!, NY!, P!].

Although Lindheimer was in the Houston, Texas, area in 1842, I wonder whether there was not a mix-up in numbers (the type of A. vernalis Engelm ex Burgess in Small, l.c., is an unnumbered Lindheimer collection made in March of 1842, and it is on deposit at MO!). The question mark in the type citation of A. texanus suggests that Small (1903: 1339) may have had some doubt. The specimens of Lindheimer 872, originally labelled A. drummondii, clearly belong in this species. Evidently Burgess did not mark a single specimen with the name A. texanus. There are two sheets at NY, the herbarium most likely to have the specimens seen by Burgess. I have chosen to typify the name with that sheet of Lindheimer 872 at NY which shows some pencilled diagnostic drawings and was annotated by Cronquist, in 1946, as A. texanus. The duplicate of that number at NY was sent there from MO by Blankinship, in 1907, i.e., after publication of the name.

- A. drummondii ssp. parviceps (Shinners) A. G. Jones, stat. and comb. nov. A. texanus var. parviceps Shinners, Field & Lab. 21: 156, 1953. TYPE: Texas, Bowie Co., Lewis Ferry, 8 mi N. of New Boston, 29 Sept, 1948. E. Whitehouse 20503 (HOLOTYPE: SMU!).

This taxon is not uncommon in Arkansas and Oklahoma, and also has been collected in Kansas. The plants are characterized by relatively small heads with white rays, a trait shared with plants of A. urophyllus Lindley in DC. The characteristic shared with typical A. drummondii is the uniform soft pubescence of stems and leaves. Habit of the capitulescence and the slightly pubescent achenes seem to link these plants with the ssp. texanus.

Aster subg. Symphyotrichum sect. Occidentales

Recent studies of the western species of the Aster occidentalis group (Allen et al., 1983; Dean & Chambers, 1983) suggest that a more natural classification is attained with the following change in status:

- A. sect. Salicifolii Torrey & Gray subsect. Occidentales (Rydberg) A. G. Jones, stat. and comb. nov. A. [sp.-group] Occidentales Rydberg, Fl. Colorado, p. 352, 353, 1906; Fl. Rocky Mountains p. 879, 881, 1917. TYPE: Rocky Mountains, Nuttall (LECTOTYPE: PH!; ISOLECTOTYPES: BM!, GH!), i.e., the type of Tripolium occidentale Nuttall = A. occidentalis (Nuttall) Torrey & Gray.

Aster subg. Symphyotrichum sect. Porteriani

- A. parviceps (Burgess) Mack. & Bush = to be merged with A. pilosus, as follows:

- A. pilosus Willd. ssp. parviceps (Burgess) A. G. Jones, stat. and comb. nov. A. ericoides L. var. parviceps Burgess in Britton & Brown, Ill. Fl. N. Amer. 3: 379, 1898. A. parviceps (Burgess) Mackenzie & Bush, Man. Fl. Jackson Co., Missouri, p. 196, 1902. A. depauperatus (Porter) Fernald var. parviceps (Burgess) Fernald, Rhodora 10: 94, 1908. TYPE: not designated and no authentic specimen found. NEOTYPE, here designated: Illinois, Cook Co., Englewood, 19 Sept, 1879. E. J. Hill 142/1879 (ILL!).

If A. pringlei (A. Gray) Britton is to be merged with A. pilosus (cf. Blake, 1930; Cronquist, 1952; Semple, 1978), then A. parviceps cannot be upheld as a separate species. I chose the Hill specimen as the neotype because the collection was made before the publication date of the basionym, and there is a good chance that Burgess may have seen a duplicate

of this sheet. The specimen was originally labelled A. ericoides and the varietal name "parviceps" was inked in, though at a later date, by the collector. The specimen well represents this taxon.

A. depauperatus (Porter) Fernald = an ecological variant of A. pilosus ssp. parviceps (cf. Fernald, 1808, 1809) and to be placed in synonymy, as follows:

A. pilosus Willd. ssp. parviceps (Burgess) A. G. Jones var. pusillus (A. Gray) A. G. Jones, comb. nov. A. ericoides L. var. pusillus A. Gray, Synopt. Fl. N. Amer. 1(2): 184, 1884. A. parviceps (Burgess) Mack. & Bush var. pusillus Fernald in Robinson & Fernald, Rhodora 11: 59, 1909. TYPE: "Serpentine barrens," Pennsylvania, Lancaster. T. C. Porter s.n. (probable HOLOTYPE: GH!).-- A. ericoides var. depauperatus Porter, Mem. Torrey Bot. Club 5: 323, 1894. A. depauperatus (Porter) Fernald, Rhodora 10: 94, 1908. TYPE: the same as that of var. pusillus (GH!).

Porter (1894) misinterpreted the rules of nomenclature. He published the superfluous varietal name "depauperatus" thinking that the epithet "pusillus" was preoccupied by the previously published specific name A. pusillus Hornemann.

Aster subg. Symphotrichum sect. Salicifolii

A. lanceolatus Willd.

This species belongs in subsect. Leucanthi. Having examined numerous herbarium specimens, and having been frustrated by the high incidence of intergradation, I have come to agree with Semple (1979) and Semple and Brammall (1982) that A. simplex Willd. cannot be upheld as a separate species and must be merged with the above. However, since the types are distinct (cf. Jones and Hieppo, 1981) and, in their morphological extremes, the taxa have well defined geographic ranges, they should be recognized at the subspecies level. For similar reasons, I have reinterpreted A. interior Wiegand. This taxon almost certainly is not a true hybrid (cf. Jones, 1980a, b) but a fixed derivative that seems to be maintained by sexual reproduction generation after generation. In the field, the populations usually can be readily recognized, but again, there is a high incidence of intergradation with both A. simplex and A. lanceolatus s.str. in areas of sympatry. I am recognizing the taxon as a subspecies of A. lanceolatus. As this study has not been completed, I am not giving the entire synonymy at this time. A. lanceolatus ssp. lanceolatus is the taxon treated by Cronquist (1952) as A. simplex var. ramosissimus (Torr. & Gray) Cronq. [basionym: A. tenuifolius Torr. & Gray non L.

var. ramosissimus Torr. & Gray; synonym: A. paniculatus Lamarck non Miller]. The new combinations are as follows:

- A. lanceolatus Willd. ssp. interior (Wiegand) A. G. Jones, stat. and comb. nov. A. interior Wiegand, *Rhodora* 35: 35, 1933. A. simplex Willd. var. interior (Wieg.) Cronquist, in Gleason, *New Britt. & Brown Ill. Fl.* 3: 466, 1952. TYPE: Illinois, [Fulton Co.], Canton, 1893. J. Wolf s.n. [HOLOTYPE: GH!; possible ISOTYPE (no. 39): GH!].-- Syn.: A. tradescantii s.auct. non L. (see below).
- A. lanceolatus Willd. ssp. simplex (Willd.) A. G. Jones, stat. and comb. nov. A. simplex Willdenow, *Enum. hort. Berol.* 2: 887, 1809. TYPE: "Hort. bot. Berol.", *Herb. Willdenow* [LECTOTYPE (sheet 1): B!; ISOLECTOTYPES (sheets 2 and 3): B! (cf. Jones and Hiepko, 1981)].
- A. tradescantii L. = A. lateriflorus (L.) Britton cf. var. hirsuticaulis (Lindley) Porter [Synonyms: A. lateriflorus var. tenuipes Wiegand.-- A. acadensis Shinnners].

I have examined and re-examined the type in the Hortus Cliffortianus (BM! = LECTOTYPE, here designated). The specimen is very poor but floral characteristics place the plant in sect. Dumosi. There may be a slight degree of introgression of A. lanceolatus, similar to that evident in the type of A. vimineus Lam. var. saxatilis Fernald and in other collections that have been identified as A. saxatilis (Fern.) Blanchard. The latter are, in my opinion, either hybrids or hybrid derivatives involving A. lateriflorus and A. lanceolatus.

- A. praealtus Poir. var. coerulescens (DC.) A. G. Jones, comb nov. A. coerulescens De Candolle, *Prodromus* 5: 235, 1836. A. salicifolius Lam. var. caerulescens (DC.) A. Gray, *Synopt. Fl. N. Amer.* 1(2): 188, 1884. TYPE: "Comancheros oriental du Texas," 1828, Berlandier 510 (= 1885) (HOLOTYPE: G-DC!; ISOTYPES: B!, BM!, G!, G-DC!, GH!, K!, MO!, P!).-- A. praealtus Poir. var. texicola Wiegand, *Rhodora* 35: 25, 1933. TYPE: Texas, Comanche Springs, 1849. Lindheimer 881 (HOLOTYPE: GH!; ISOTYPE: MO!).

Having carefully examined the substantial but rather poorly preserved type material, I agree with Shinnners (1949) that A. coerulescens belongs in synonymy under A. praealtus. I had previously interpreted this taxon as a hybrid between A. praealtus and A. simplex = A. lanceolatus. Putative hybrids, i.e., plants that exhibit intermediacy between the two above species, are not uncommon in the region of the type locality. They are probably to be identified with A. eulae Shinnners.

- A. puniceus L. ssp. elliottii (Torr. & Gray) A. G. Jones, stat. and comb. nov. A. elliottii Torrey & Gray, Fl. N. Amer. 2: 140, 1841. TYPE: South Carolina, Santee Canal, H. W. Ravenel (ex Herb. Elliott) (HOLOTYPE: GH!).

Although the extreme forms of this taxon can be distinguished from typical A. puniceus, there is complete intergradation in regions of sympatry, e.g., in Maryland, Virginia, and Tennessee. A diploid chromosome number of $n = 8$ is shared by populations of ssp. puniceus and ssp. elliottii (cf. Jones, 1980a, b).

- A. puniceus L. ssp. elliottii (Torr. & Gray) A. G. Jones var. scabricaulis (Shinners) A. G. Jones, stat. and comb. nov. A. scabricaulis Shinners, Field & Lab 21: 156, 1953. TYPE: Texas, Smith Co., 16 miles NW of Tyler, 19 Oct, 1947. Shinners 9504 (HOLOTYPE: SMU!).

Aster scabricaulis Shinners is known only from Smith and Van Zandt counties, Texas, the tall-stemmed plants growing in boggy ground. The affinities clearly lie with A. puniceus. Characteristics of the leaves, rhizomes, and capituli relate the taxon to ssp. elliottii. In addition to their stout habit, the plants are distinguished by slender, long-attenuate, strongly squarrose phyllaries. A population from Smith County was found to have a diploid chromosome number of $2n = 16$ [leg. E. Nixon; voucher: A.G.J. 6728 (ILL)], a number shared with populations of typical A. puniceus, as well as ssp. elliottii.

- A. puniceus L. ssp. firmus (Nees) A. G. Jones, stat. and comb. nov. A. firmus Nees, Syn. Ast. 25: 1818. TYPE: "...Horto bot. Herbipolitano..." (not found; authentic specimen = LECTOTYPE: GH!).-- A. puniceus L. var. lucidulus A. Gray, Synopt. Fl. N. Amer. 1(2): 195, 1884. A. lucidulus (A. Gray) Wiegand, Rhodora 26: 4, 1924. TYPE: Wisconsin, Milwaukee, Lapham s.n. (HOLOTYPE: GH!; ISOTYPE: WIS!).

I had previously recognized this taxon at species rank. However, the high incidence of intergradation with typical A. puniceus and with other variants of this extremely variable species makes this specific separation untenable. The plants seem to exhibit some introgression of A. lanceolatus Willd. and/or A. longifolius Lam. This is also reflected in the reported chromosome counts (Jones, 1980b) which are both diploid and tetraploid ($2n = 16$ and 32). At this time, I am not citing the complete synonymy.

- A. novi-belgii L. ssp. johannensis (Fernald) A. G. Jones, stat. and comb. nov. A. johannensis Fernald, Rhodora 17: 12, 1915. TYPE: Quebec, near Ouatchouan Falls, Lake St. John. 19 Aug, 1904. W. F. Wight 228 (HOLOTYPE: GH!).-- A. longifolius

s.auct. non Lamarck.-- A. rolandii Shinnery, *Rhodora* 45: 347, 1943. TYPE: Nova Scotia, Inverness Co., Troy, 26 Sept, 1928. Prince & Atwood 1456 (HOLOTYPE: WIS!; ISOTYPE: GH!).-- A. longifolius Lam. var. villicaulis A. Gray, Synopt. Fl. N. Amer. 1(2): 189, 1884. A. novi-belgii L. var. villicaulis (A. Gray) Boivin, Nat. Canad. 94: 645, 1967. TYPE: northern Maine, [Aroostook Co.] Fort Kent, Aug, 1868? Kate Furbish s.n. (HOLOTYPE: GH!).

The plants are of somewhat shorter stature than typical A. novi-belgii. Introgression of A. ciliolatus or A. lateriflorus is suggested by the often pubescent midribs. Plants with uniformly villous stems are very common and are recognized as var. villicaulis (A. Gray) Boivin. While the stands of subsp. johannensis usually can be recognized in the field, identification of herbarium material is often difficult. One finds many specimens that are intermediate in characteristics. Populations of this subspecies [e.g., A.G.J. 4318, 4320, 4330, 5176 (ILL)] and of ssp. novi-belgii [e.g., A.G.J. 4287, 4298, 4313, 5162 (ILL)] share a hexaploid chromosome number of $2n = 6x = 48$, and my crossing attempts resulted in normal seed set.

A. novi-belgii L. ssp. tardiflorus (L.) A. G. Jones, stat. and comb. nov. A. tardiflorus Linnaeus, Sp. Pl., Ed. 2, 2: 1231, 1763. TYPE: cult. in Hort. Ups. Herb. Linn. no. 997.48 (LECTOTYPE, designated by me in 1981: LINN!); nos. 997.49 and 997.50 (ISOLECTOTYPES: LINN!).-- A. foliaceus s.auct. non Lindley in DC.-- A. subspicatus s.auct. non Nees.

In my experience, there is complete interfertility and a high degree of intergradation in areas of sympatry between populations of this subspecies and the other subspecies of A. novi-belgii. Chromosome numbers recorded are also the same: $2n = 48$ (cf. Jones, 1980b). The complete synonymy will be published elsewhere.

Aster subg. Aster sect. Alpigeni

A. alpinus L.

In my experience, all New World collections labelled A. alpinus, perhaps with one or two exceptions, belong in other taxa. I am not sure about the exceptions either because I did not have any mature achenes. In all probability, this species is not native in North America, but more study is needed. Aster pygmaeus Lindley in Hooker does not belong in this section but in sect. Radulini. The taxon is to be recognized as A. sibiricus L. ssp. pygmaeus (Lindley in Hooker) Löve & Löve.

Aster subg. Aster sect. SpectabilesA. carnerosanus S. Watson

So far, I have been unable to locate the type, but the species probably belongs near A. laevis (subg. Symphyotrichum sect. Concinni).

A. curtisii Torrey & Gray = A. retroflexus Lindley in DC. (sect. Concinni-- cf. Jones, 1983b).Aster subg. Aster sect. BiotiaA. mirabilis Torrey & Gray, Fl. N. Amer. 2: 165, 1841. TYPE: South Carolina, near Columbia, Sept, 1835. Gibbes (HOLOTYPE: GH!).--
A. commixtus s.auct. non Eurybia commixta Nees.

The specimen cited by Nees von Esenbeck (1832) for Eurybia commixta came from a plant cultivated in the Bonn Botanic Garden that possibly was of hybrid origin. I have seen an authentic specimen (G-DC!), which does not resemble the plants I have collected near Columbia, South Carolina. For one, it has heads with a somewhat glandular involucre of phyllaries that are not squarrose. Plants of A. mirabilis have eglandular, strongly squarrose phyllaries. In my opinion, the latter name should be reinstated for this Biotian species of South Carolina and Georgia.

ACKNOWLEDGMENTS

Financial support for this study has been provided by N.S.F. Grant DEB 80-22172. I gratefully acknowledge help received in my search for types from the curators and staff of the following herbaria: ALTA, B, BH-CU, BM, CGE, G, G-DC, GH, K, LINN, MO, NEBC, NY, P, PH, SMU, UBC, USF, and WIS.

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